Michigan. The ridges are separated by the low level prairie land which makes up the Chicago Plain.

The formation of the dunes along the present shore of the head of Lake Michigan was considered, and also the changes in the flora that may be noted as one passes from the naked shifting dunes and extremely xerophytic conditions of those recently fixed, to the dunes farthest inland where mesophytic conditions prevail. Certain grasses, species of *Calamagrostis, Andropogon, Ammophila, Elymus,* do much to bind the dunes. The first trees to appear are the cottonwood and certain willows which are also of value in fixing the dunes. The scrub-oak and black-oak soon appear and are followed by the bur-oak, the white-oak, and the red-oak. *Pinus Banksiana* is followed by the white pine; the pig-nut hickory is succeeded by the shag-bark; other trees, such as the basswood, ash, cherry and black walnut, come in, and on the most mesophytic slopes of the oldest dunes and beaches one finds the sugar maple and, more rarely, the beech, hemlock, and southern tulip-tree. Corresponding changes in the shrubby and herbaceous vegetation occur, and at Stevensville and Porter, one may pass, in a short time, from extreme desert conditions through successive stages of the open forest of low trees and shrubs to the oak-hickory type and finally to the beech-maple-hemlock combination, which indicates the culmination of the forest in this region.

The usual ecological factors, heat, light, water, soil, wind, and direction of slope all have their influence in the floral distribution. Conditions in the dunes are extreme. Thus, for example, the trailing-arbutus and the bearberry, both northern types, may appear on the north-facing slope of a dune, while just over the crest, on the south-facing slope, the cactus may flourish.

Emphasis was laid on the fact that species vary with environment, often losing more or less of their xerophytic adaptations under mesophytic conditions; that a plant-society is only a stage in the development of a region; that the apparent tendency is for all to approach the mesophytic condition.

The paper was discussed by Dr. Grout and Dr. Rydberg.

Some Relations between Habitat and Structure in Mosses: Dr. A. J. GROUT.

Xerophytic mosses apparently tend to develop short, thick-walled cells, often with papillæ over the lumen. Nearly all mosses with papillæ over the lumen of the cell are xerophytic, or belong in groups that are largely xerophytic. Presumably the papillæ tend to retard transpiration.

Pleurocarpous mosses growing on trees tend to develop short thick-walled cells, especially at the basal angles, and a similarity of leaf structure in tree-growing mosses due to this fact has produced much of the confusion and uncertainty in classifying such mosses, *e. g., Alsia, Dendroalsia, Bestia, Groutia* and their relatives.

Tree-growing mosses also tend to develop erect capsules, and the correlated imperfect peristomes. To some extent this seems to apply to other xerophytic mosses.

Aquatic or subaquatic pleurocarpous mosses have an apparent tendency to develop enlarged and inflated alar cells.

Cleistocarpous and gymnostomous mosses appear, for the most part, to be mosses of various relationships adapted to damp soil, not closely covered with other vegetation, and best suited to support a rather short-lived annual moss.

The speaker recognized numerous exceptions to the above relationships, if stated as general principles, but, stated as tendencies, he believes they are worthy of serious consideration by the systematist, the morphologist, and the ecologist.

A brief discussion followed.

C. STUART GAGER,
Secretary

DISCUSSION AND CORRESPONDENCE

ELIMINATION OR FIRST SPECIES

HAVING followed the discussion of the proposed new rules of zoological nomenclature in the pages of SCIENCE, I feel that I voice the opinion of many zoologists when I say 'a plague o' both your houses.' For thirty years

I have been looking for fixity in zoological names, but that desirable condition seems further off than ever. It is all very well to indulge in these antiquarian researches, these games of taxonomic logomachy, if they be recognized as such, but the players fail to realize one thing: Names of animals and plants are but means for easy reference; nomenclature is not the end and object of all biological science.

The sanest word in all this discussion has, in my opinion, been said by Dr. Williston. This digging up of forgotten screeds means but the relegating of the great masters of the past to a secondary position; this framing of ex post facto laws offers a precedent for the future subject of that intolerable disease once known as the 'mihi itch' to set aside as lightly the laborious schemes of the sciolists of to-day.

Biologists may apparently be divided into two groups: One contains those who find great enjoyment in renaming things already well named and who regard names as the object of all science. The other group have something to tell us about animals and plants and they regard names merely as means of identification of the forms referred to. Certainly they have some rights which should be considered. Must they run through the gamut of *Triton, Triturus, Molge,* etc., every time the systematist changes his mind? Must I know the mental make-up—radical or conservative—of the biologist to know what he means when he refers to *Uca* or to *Acer saccharinum*? An article deals with *Esox;* does it treat of a pike or a needle fish?

The safest way for the morphologist or the ecologist is to stick to the well-accepted, time-honored names and to utterly ignore the vagaries of the nominalist. The question once was 'Who reads an American book?' If the present tendency continues it will soon be 'Who can read an American biological work?' It would be most desirable that at the coming Zoological Congress a morphologist or two should be added to the committee on nomenclature to act as a balance wheel.

J. S. Kingsley

A CORRECTION

To the Editor of Science: A statement on page 452 of Science of March 22 requires a rectification in the interest of the unprejudiced reader.

The sentence in question reads as follows:

> These results show conclusively that magnesium sulphate in proper dilution is beneficial to the growth of seedlings, and that any inhibitory effects are due to the presence of excessive amounts, thus controverting Loew's theory that magnesium salts when alone in solution are always injurious to plant growth.

Permit me the following remarks regarding this remarkable sentence:

1. It is not a *theory* that magnesium salts act poisonously on plants; it is a *fact.*

2. Not only Loew, but also others have observed the same fact. Loew has merely furnished an explanation well in accord with certain observations.

3. The doses at which magnesium salts, applied alone, are poisonous for plants can *impossibly* be called *excessive,* since even at 0.02 per cent. a poisonous action of magnesium salts on algæ can be observed, while calcium nitrate is not in the least injurious for algæ at even 1 per cent.

4. It is a well-known fact that many compounds that act poisonously at a certain concentration can act in very high dilution as stimulants of growth.

5. It is erroneous to attribute this stimulating action to any nutritive quality of the poison.

The unprejudiced reader who desires some information as to the nutritive rôle of magnesium salts in plants and to the conditions under which this function can be performed, is kindly requested to consult Bulletin No. 45 of the Bureau of Plant Industry, 'The Physiological Rôle of Mineral Nutrients in Plants,' Washington, 1903.

O. Loew

Imperial University of Tokyo, Japan,
April, 1907

SPECIAL ARTICLES

THE BEHAVIOR OF THE SEEDLINGS OF CERTAIN VIOLET HYBRIDS

During the summer of 1906 I raised plants from the seeds of twenty-five different hybrids